

AVIATION

The Oldest American Aeronautical Magazine

SEPTEMBER 7, 1925

Issued Weekly

PRICE 10 CENTS



Double parachute jump from a Martin Bomber of the U. S. Marine Corps

Official Photo, U. S. Navy

VOLUME
XIX

SPECIAL FEATURES

NUMBER
10

ITALIAN AIRSHIP N2
THE DH54 AIR LINER
CONTINENTAL AIR TRANSPORT

GARDNER PUBLISHING CO., Inc.
HIGHLAND, N. Y.
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under Act of March 3, 1879.

BOEING AIRPLANE COMPANY

Manufacturers
of
*Military and Commercial
Aircraft*

Seattle, Washington

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VOL. XIX, NO. 10

Published every Monday

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GALLAUDET (FIVE PASSENGER) LIBERTY 12 TOURIST

Standardized D.H. parts assure easy replacement. New latest improved high compression Liberty 12 motor—gear pump positive feed gasoline system; also 7 gal. gravity tank. Dual control side by side in rear cockpit—adjustable horizontal stabilizer.

Weight including passenger load	2650 lbs.
Empty	1650 "
Length	27' 0"
Wing	35' 0"
Span	47' 0"
Height	8' 0"
Wing area	151' 0"
Angle of incidence	2 1/2°
Wing	RAF 15

Wing area	145 sq. ft.
Wing loading	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.
Wing	175 lbs. per sq. ft.

Complete with all instruments, ready to fly at our field, price \$8,500.00

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WRITE FOR OUR NEW PRICE BULLETIN. READY NOW!

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The Latest Italian Airship, the N2

Description of the 247,000 cu. ft. Semi-Rigid Airship Designed by Nobile and Successfully Tested

The continuous progress of Italian technique in the construction of semi-rigid airships began with the success of the largest semi-rigid ever built, the N-25,000 cu. ft., which is at present in course of construction in Rome, at the aeronautical construction plant. In designing this new large airship, Regio Aeronautica decided to introduce a number of substantial modifications in the structure, with respect to previous types, and practical tests were required to justify the experiments. In order to acquire the necessary practical experience, the N-2 was built, of reduced volume, but embodying with respect to the N1 a number of structural improvements and eliminating some minor defects. These modifications, in some cases of great importance and in other cases of detail only, are described in the following. The N-2 made her successful maiden flight near Rome in the early part of July.

The N1 already represented a decided step forward, with respect to the solution of the aerodynamic problem. However, a further improvement was attained in the construction of the N2 by adopting a profile for the envelope of more pronounced elongation and better pretension.

The adopted profile was obtained from that of the N1 by inserting a central cylindrical section and by adopting for the stern a pronounced conical shape instead of the rounded cap

only an internal stay, in the vertical plane of longitudinal symmetry is required to maintain the cross section of the airship in practically a circular shape. Thus, the poststaple of the airship is actually reduced and the tension of the fabric better distributed. The gas chamber is subdivided into seven compartments of about 1900 cu. m. (26,314 cu. ft.) capacity each, by means of six diaphragms.

The control car is located at the base of the airship, 18.85 m. (62 ft. 0 in.) behind the extreme point. Visibility is thus excellent, even for the second observation post, located in the rear part of the car. It is easy and very comfortable for the navigating personnel. It includes a radio station and a lavatory. A passage leads from the control car to the gangway below the keel of the airship, which runs the entire length from bow to stern and which accommodates the various gaslines and water-filled tanks as well as loading ropes, etc. A vertical wall through the envelope permits access from the keel to the upper part of the envelope.

The airship is equipped with two engine cars, located 46 m. (150 ft.) from the extreme point of the ship, symmetrically with respect to the longitudinal plane of symmetry of the airship. These can be very well streamlined and comfortable for the mechanics, each car contains an engine

Pratt & Whitney V6 engine, 550 hp. The engine radiator is external, so that the hot stream of air from the radiator does not enter the engine car during flight, thus eliminating discomfort for the mechanics.

The engine cars are suspended from the keel by means of steel cables only. These are equipped with pneumatic shock absorbers, so that the danger of breakage in case of a rough landing is reduced to a minimum. The engine cars are connected with the keel by means of movable gangways, which are actually kept inside the keel.

The nose stiffening is substantially similar to that of the N1. The extreme point of the keel, however, is not rigid as in previous designs, but succeeded by means of flexible joints. Also the rim of the nose stiffening is flexible, so that assembly is a very easy.

The Tail Construction

The envelope consists of horizontal and vertical fins, with elevators and rudder. The structure of the fin is similar to that of those of the N1, but much lighter. The horizontal fins are strengthened at their periphery by means of a very thin steel girder. However, the envelope is substantially different from that of the N1. In fact, the envelope shows different construction of longitudinal ribs and transverse ribs have been completely eliminated. The previous construction proved unsatisfactory, as it adapted itself to the deformation of the envelope, started by the high lateral pressure and by the strabbling of the fabric. The horizontal fins of the new envelope are supported by flat crossmembers projecting from the keel of the airship, in alignment with two consecutive transverse sections of the envelope.

The horizontal fins consequently transmit the dynamic loads to which they are subjected during flight, directly to the keel, by means of frame-work distributed suitably and simple to construct. The horizontal fins are each situated on the outside of the airship by two struts only, suitably shaped and of maximum drag. This construction permits the sides of the ship to be considerably lightened and presents a great advantage in that fins are not subject to any displacement with respect to the keel on account of the deformation of the envelope.

This arrangement of the fins has already been tested out in the Mr. airship, the smallest semi-rigid in the world. It was necessary to test it again in a structure of greater dimensions, before it could be adopted definitely for the new 247,000 cu. m. semi-rigid airship. Results of tests seem to be conclusive and to eliminate any doubt.

Newer Details and Characteristics

A number of other improvements have been introduced in the N2, such as, for example, the practical control of the gas valves, which has shown as precise to be of the utmost importance and safety; the adoption of hand operated valves, of maximum weight, for the release of air from the ballonet; and finally the introduction of a rapid ladder in the wall giving access to the top of the envelope from the keel of the ship.

CHARACTERISTICS

Volume	247,000 cu. m.	347,000 cu. ft.
Length	108 m.	354 ft.
Maximum diameter	30 m.	98 ft.
Span	25 m.	82 ft.
Maximum width	15 m.	49 ft.
Control car	18.85 m.	62 ft.
Control car height	10 m.	33 ft.
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Close View of Continental Air Development

How European Airlines Appear to an Informed American Visitor

The following letter has been received by AVIATION from a friend who is in Europe studying air transport. It probably will bring the reader closer to the actual conditions beneath it is written in letter style.—KOROS

The Germans are of course extremely active in aviation. Air traffic here has reached a commercial status I believe. Traffic reports are of course distributed for the most part, but some real facts are apparent. For instance, I could not get a return flight from Koenigsberg to Berlin last week because both the Junkers Line and Aero-Lloyd were booked for those days in advance. I did not, then, a 400 km. stretch in the scheduled 4 hr. 35 min., landing at Danzig a few minutes ahead of time and landing at Koenigsberg about fifteen minutes ahead of time. Schedules are maintained with remarkable regularity, for two reasons, chiefly for publicity sake, trying to moderate the public with the tradition that always are both safe and certain, and then enough leeway is given the pilots so that the planes can always make schedule time, regardless of headwinds or other delays. I made the same flight three years ago, and remember arriving and on the return flight because I came some six minutes late, an impressive fact. I made several flights over southern routes, and always found passengers, sometimes only one, but schedules always maintained with great precision, and everywhere great solicitude for passengers. Nothing is too good, so too expensive, if it helps comfort in traveling. Officials, waiters and pilots are polite, eager to be of help and quick willing to go a long way to suit a passenger at times. I made a trip just the other day from Dresden, and in order to get a passenger to the plane on time an extra car was sent to meet him late. Chairs, maps, tables are given away freely, also pastries and victuals.

For the most part is about one-third the width of the Rhine and a dense forest as well. The pilot of course sits off fairly large portions of land, but requires hardly give trouble, and the pilots are expert and long on the winged side of the nose giving them safe conditions for landing. By the way, large numbers of people sit at the first believe places, and a large crowd now is off at the start, including photographers, newspapermen and officials. State police took charge of the landing area and kept the crowd away. Police, by the way, are most extremely, and might be called national air traffic men. The reason, by the way, that the Rhine has so no line is simply because the French won't permit this territory off being occupied territory. When was both Junkers and Aero-Lloyd would time ago have been operating along the Rhine.

Avoiding the Allied Restrictions

I flew to Rome a few days ago on the new large-sized Junkers. It carries twelve passengers, and has three engines. Due to Allied orders of airplane power in Germany there was at first some difficulty. The plane is built for three 280 hp. engines, but the Allied Control permitted only one 280 hp. engine in the tail, and only 160 hp. engine in the wings. But the Germans, as usual, got around this. They simply used the planes up to Sweden, underpowered, as per Allied regulations, and the planes transferred to Swedish territory, and then sent them back to operate in Germany under Allied regulations, with their full-powered engines. The plane is an about two-hour vehicle, with sufficient room as easy to handle as the regular four passenger plane, the exact

and the difference in time is 4 hr. 45 min. by plane and 11 hr. by train. The new Elbe River line is just under five days train time, and true speed not 200 per cent. The duration of the various companies, in review to my questions, say that rates are extremely cheap and of course not paying, but state help balances the budget, and every driver says that low rates are quite as essential as safety, and regularity. After Germans have stopped the air traffic, and find it

outmost in Rome. It is futile as the part of France to try to suppress aircraft progress in Germany, as the Germans operate from almost without Allied supervision. Had the Allies temple, they would suppress aircraft manufacturing within Germany and have it under their supervision and control. But the Allies have imposed their military limitations, disabled the German out of the country, and neutral status where they have complete freedom. There is no danger of



The D-10 Junkers. The nucleus of all civil construction

indispensable, as they are sure to do, then rates will have to come up a bit, but for the present rates are very low. The high cost of engine rates are about three times the usual rates, and most double. As a result of all this, Germans are acquiring the air habit. The lines are filled on the main stretches, and Germans everywhere are conscious that there is air traffic just as there is train traffic.

Political Situation

I shall give you a summary of an interview with a director of one of the lines. It summarizes fairly well the German view.

If the German attitude to all help other countries it is the result of Allied restrictions, with the French actively engaged in trying to keep down German aviation, with the British a bit more latent. The French opposition has, as usual, been the most violent of the Versailles Treaty provisions, forcing German manufacturers to be allowed for thirty years, such as the Junkers factories in Juelich, Germany in Switzerland and Fokker in Holland. Junkers has been

German military aviation, as the Germans are interested solely in civil aircraft. They want international relations established and complete cooperation with other nations, as that their own aviation can best be developed. But the Allies are still afraid of German competition, and still trying to crush the competition. England has finally withdrawn from the policy of shutting out German aircraft from former Allied countries as established by the International Conference in 1923. France still refuses to allow Germany to extend her lines westward. Germany, since 1923, has continued by shutting out French traffic over German territory. The Franco-German line is no longer in active operation because the Germans won't permit flying over their territory, and the passage over the border Alps is dangerous and has already resulted in several fatal crashes. Germany wants reciprocal privileges. Negotiations are going on, but the only condition the Germans will concede is reciprocal flying privileges.

The above opinion should of course be taken with a grain of salt, and later I'll try to give you the full story. I might say here that the Germans, and with some right, consider



The Fokker D-10, which has been successful in many European air lines

I flew over the newly established Elbe route recently. This is the first river route to be established in Germany, and was started this week. The line runs from Hamburg (Altona) to Dresden, with a stop at Magdeburg. Junkers planes are used—the regular four passenger plane, with personnel. It is, of course, a Junkers line, with nobody from the government. The Elbe is a narrow winding river, but it flows through a comparatively flat country. The line serves a four hour flight, with a half hour break over in Magdeburg. It runs from time to time. The route should be fairly successful, as the Germans with their usual energy are pushing it and it fits a useful transportation facility. Flying over the river I couldn't help thinking just what the Germans would do with our Hudson, Mississippi and Great Lakes. The Elbe,

repairs enlarged. One flight, with four passengers, was as successful as any Twentieth Century Limited trip, only of course vastly more comfortable and pleasant. Little passenger results, except in cheaply weather, as the pilots take great pains to keep the plane steady, even at the expense of time and gas consumption. The planes of this large size operate on the Amsterdam, and so fast as new ones are built will be put into service in the near crowded lines.

I am going to Amsterdam the end of this week on the large plane, and early next week shall fly to Geneva on the Junkers line. Prices as compared to train rates are little higher than first class, and in many instances not as high. For instance the Koenigsberg flight costs 90 gold marks (160) for the 600 km. The cost for second class on the fast train is 62 marks,



The Junkers D-10, which has been in use on commercial air lines both in Germany and over other countries over the border

Germany the natural center of continental air traffic, for lines leading to Russia and the Orient will be developed and these must operate without crossing German territory, and in turn both England and France will have to come to some agreement with Germany, if French routes for Russian and Central traffic and England's route for Asia are to be released. Although the treaty negotiations governing airplane export power in Germany have been let alone, the aviation permitted here after all have small, and the Germans are not without at the national authorities. But the Germans recognize the advantage given Germany by first destroying most of her war stock, and then clearing the field for new material, and then the restrictions which forced Germany to concentrate on purely civil aviation, if there is such a thing as purely civil aircraft. Germany already lives within the limits of the Allied "Non-Interdiction" on commercial aircraft, as indicated with the French more military requirements for selected aircraft lines.

Regarding private air mail, there is talk to be had here of great interest, now that the Post Office Department in connection with the airlines has been authorized to make agreements with Germany for mail in air transport from Berlin was discontinued, in part, last week by the Japanese Line. It formerly ran from Berlin to Stockholm, leaving Berlin at 6 p.m. and arriving Stockholm at 11 a.m. The present practice in some general-mail plane leaving Berlin at eleven o'clock, going as far as Helsing, Sweden, as time to reach the express mail which brings the mail into Stockholm in the morning. The arrival of mail at 5 a.m. was of course unnecessary, and the present plan works better and more economically. Air mail is much more extensively used here than in America. There is no comparison.



International Reception Place
A French plane has taken on passengers in the Rhine. As shown in picture the late German and French.

I might add here that the Germans are gathering experience that is probably essential and without which no successful air traffic will ever be really established. The instance, as has been said, are continuously being changed, new data introduced, new lines established, all cases done very well, etc. Many Germans, even now, see that the entire system will have to be changed, that the military system out of Berlin (obviously a military advantage) will have to be done away with and commercial traffic will be established and controlled under civilian into consideration. For example, London-Berlin-Moscow, Paris-Prague-Dresden, Holland-Venice, etc. planning lines to run direct, with intermediate lines forming such connections. There is one air line within German soil, with connecting local lines, is considered the most practical plan, which will have Berlin as the center of a radiating system. But the Germans consider their conditions. It is believed that that of France with Rome as its center Berlin can use the same point in Germany and should not originally be made so.

This planning of air routes will give an idea of recent

German progress in air traffic. The other day I was walking in the Army Club at Berlin and was taken to an interesting discussion. Two men from a town in east Germany had asked an officer Y. Techna, the director of the Army Club, for assistance in getting an air line to run through their city. One of the men was a landscape painter. Major Techna told them frankly that even if the town generated aviation returns they could not have Berlin Line run through their town. The only thing for them to do was to establish a small private line, which could connect with the main line running north and south of their town. The two men agreed and preliminary plans were laid for a tri-axial line, making connections with the Berlin Brandenburg and Berlin-Havel Lines.



Focke-Wulf 4 plane (front view) seen from the front.

Colonel Reinher is director of the newly established "Institut für Luftverkehr" located in Koenigsberg. The Germans have given the Institut sufficient funds to that Reinher is collecting books and literature from all countries regardless of race. Of course the United States has no such facilities and there is no collection of air law to be found in America. I am an aviator permission to go to Moscow. The Reinher also has established an Institute for International Air Law, and are doing very interesting work.

Recording Compass

The new device travels on a paper strip, by means of pen and ink, all the various headings which the airplane assumes. First successful tests of this new recording compass were made in flights over Berlin and vicinity the latter part of March. The tests were highly satisfactory. In one of them, after preliminary maneuvering over McCook Field, a straight flight was made to Ritten. After reaching there, a turn was made and the flight made back to McCook. All changes were faithful and accurately recorded.

The vertical movement of the recording pen is governed by a system of magnets and magnets so that the entire device can be placed in the wings or in tail of the fuselage at a distance from wing or tail. The compass itself can be put on the tail and the recording device arranged directly in front of the pilot, the two parts being connected by steel wires.

One of the great troubles with using magnetic compasses in airplanes has been the errors caused by the steel in the engine being so close to the compass that indications are affected.

There are two models of the recording compass—one in which the sheet is marked off according to the time, so that one can tell how many minutes the plane flew in any one direction, and a second model that lends itself admirably to aerial navigation, in which the chart is marked off in actual miles traveled in each direction. In the latter model, instead of measuring the chart relative to clockwise, they are arranged by a medium interlocked with a true air-distance measure.

The advantages of the recording compass to the Air Service are many. In war time navigation, for night flying or over clouds, it will aid the pilot in resolving his confusion for bearing and also aid him in reversing his path and returning to his base. It is considered essential that it will be a check on the pilot's sense of direction in flying straight and direct courses. The third and general advantage is that the actual functioning of the compass enables a study to be made of certain improvements in airplanes and instruments designed to help the pilot in cross-country flying. The first tests of the recording compass were made under the direction of Y. E. Sherrin, instructor chief at McCook Field. Louis D. L. Bremer was the pilot and Norton Lamm the observer.

New English Passenger Machine, the DH54

New Fourteen Passenger Airplane with 600 Hp. Rolls-Royce Condor Engine Now in Service

The most recent acquisition of the English Airways operating company, Imperial Airways, is the DeHavilland, single staged biplane, the DH54. This machine was ordered about a year ago and was tested by Captain Reed on June 35. It is powered with a Rolls-Royce Condor as is the Avro Anson shortly to be put in service by the same company.

In general design and construction the DH54 differs very closely standard DeHavilland practice, and at first glance the DH54 looks very much like the 54, but on a larger scale. There are, however, several noticeable differences in general design as well as in details. In the '34, the upper wing is on the top of the fuselage, whereas in the '54, there is a gap between them. This is due to the larger wing span of the new machine and the fact that the two fuselages are about the same height. One of the outstanding characteristics of the machine which viewed from a distance in the high aspect ratio of the wings, actually being 5.5.

Seating Arrangements

The fuselage is the usual DeHavilland design with flat sides and a deeply arched roof. It is in two sections with the joint just aft of the main door. The joint consists of both through the fuselage with false plates made and out. Each portion forms a complete structure in itself, and is kept out water in case of an emergency landing, the small gap between the two sections is covered with fabric. The cabin portion of the fuselage is very large and seating arrangements are provided for fourteen passengers, the seats being

arranged in three rows, two close together on one side and a single row on the other with a narrow aisle the entire length of the cabin. All of the cabin is a large inventory.



From International
View of the nose and under surface of the DH54. An idea of the use of the machine can be gained by comparison with the Rolls-Royce Condor.

The Rolls-Royce Condor engine is mounted on a composite structure of wood and steel and is supported from the rest of the machine by a five point bracket. The pivot weight is in the main and is further secured by being enclosed in a "shell" to prevent the angle of vision. Next to the shell on a slightly lower level is another cut line a suspension. The fuel system is a simple gravity system with the main tank in the top of the engine nacelle. The capacity is 175 gal.

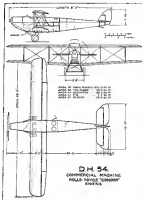
Landing Gear is Collapsible

The landing gear was designed with a view to possible forced landings in the water. It is of the usual Vee type. Shock absorption is by rubber blocks in compression in a standard housing in the middle of the aft leg. The hinge pins of the aft legs are connected by a lever to a control in the photo cockpit. The front legs are fastened to the axle like a hook as shaped that when the large pins are pulled out and the aft legs fall, the axle, which and the two aft legs are free to fall. When the landing axle the order the two front legs will fold back against the fuselage. By this means the pilot will be able to make a stall landing on the water without danger of nose gear.

The principal feature of the wings are the DeHavilland flaps. These flaps are automatic in their action. They are held down by rubber straps whose tension is adjustable. When the machine reaches a flying speed, determined by the tension of the cords, the flaps move up in line with the rest of the wings. The ailerons have the DeHavilland differential control and are also arranged in not a manner with the flaps. The tips of these two devices are given a swivel to make a better stilling speed and better control at that speed.

Performance

Detailed performance figures are not yet available, but the cruising speed is expected to be in the neighborhood of 160 m.p.h. and the landing speed about 50 m.p.h. The weight empty is about 2,800 lb. and loaded 11,000 lb.





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PUBLISHER'S NEWS LETTER

There are times when a hell in controversy and advocate when certain points become clear and particularly sometimes last their varying influence. This confusion is not the result of some heat or confusion of spirit but comes from a realization that perhaps the actual point of view is not as clear as it seems to be. And this realization of the fact that aviation is not as simple as it seems to be is a fact that is being recognized by the public. And this realization of the fact that aviation is not as simple as it seems to be is a fact that is being recognized by the public. And this realization of the fact that aviation is not as simple as it seems to be is a fact that is being recognized by the public.

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PERSONNEL. The personnel will be found available among that group of airmen produced by the war who are devoting their lives to the application of aviation to civilian needs.

EQUIPMENT. Obviously the Aircraft Operating Companies, not themselves designers or builders, must select their equipment from the best which the aircraft industry can supply.

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As interchangeability of parts with consequent reduction in cost of maintenance was an important factor in the selection of the Carrier Pigeon by one company, so standardization of airplanes of one type and of one manufacturer by the Post Office and the leading operating companies will make efficient and economical operation possible. The use by all pilots of one type, the standardization of interchangeable spare parts for general distribution from Curtiss stores throughout the country, and the reduced price of planes and parts through centralized quantity production will make the Carrier Pigeon the standard commercial airplane. For "feeder lines" the Curtiss Lark, a smaller prototype of the Pigeon, will shortly be available.

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